

Стає загально визнаним твердження, що вирішення економічних проблем потребує певних екологічних знань. Рациональне, екологічно обгрунтоване природокористування можливе лише за умов масової екологічної грамотності. Знання основ екології – запорука реалізації усіх можливостей демократичного суспільства, у якому важливо виявити причину і попередити екологічні негаразди, а не боротися з їх наслідками. Підготовка спеціалістів, які при вирішенні економічних проблем підприємства чи держави враховували б екологічний фактор, а охорону довкілля і природних ресурсів економічно обгрунтовували у наш час є надзвичайно актуальною.

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PLANNING ECOTOURISM IN THE CARPATHIANS

1. Introduction

In 1991, Ukraine became an independent country after the Soviet Union broke up, and it needs a new structure to manage its forests. It should be noted that the priority of Ukrainian forestry is to make use of ecological, recreational, aesthetic, educational, and other non-market, socially important benefits according to the Forest Act of 1994 (Strochinskii et. al., 2001). According to the statistics (FAO, 1997), the total land area is 57,935,000 (ha), and 15.9 percent of the area is covered with forests. The Carpathian forests are one of the major forested regions in this country. The most wide spread woody species there are Norway Spruce (*Picea abies*) and European beech (*Fagus sylvatica*), which make up 41 percent and 35 percent of the forestland, respectively (Strochinskii et. al., 2001). Other common species are durmast oaks (*Quercus robur* and *Quercus petraea*), common silver fir (*Abies alba*), and European hornbeam (*Carpinus betulus*) (Strochinskii et. al., 2001). In 2001, we started planning ecotourism in the Carpathians to realize sustainable development in the region. Ecotourism is defined as travel to fragile, pristine, and usually protected areas that strives to be low impact and (usually) small scale. It helps educate the traveler; provides funds for conservation; directly benefits the economic development and political empowerment of local communities; and fosters respect for different cultures and for human rights (Honey, 1999).

In this project, we put a special emphasis on landscape management, road networks, environmental conservation, welfare of local people and public involvement in the process of ecotourism planning.

2. Ecotourism in the Carpathians

2.1. Definition of ecotourism

Ecotourism has a variety of definitions. Among them, Honey (1999) provided us the appropriate definitions of ecotourism shown as follows:

1. *Involves travel to natural destinations.* These destinations are often remote areas, whether inhabited or uninhabited, and are usually under some kind of environmental protection at the national, international, communal, or private level.

2. *Minimizes impact.* Tourism causes damage. Ecotourism strives to minimize the adverse effects of hotels, trails, and other infrastructure by using either recycled or

plentifully available local building materials, renewable sources of energy, recycling and safe disposal of waste and garbage, and environmentally and culturally sensitive architectural design.

3. *Builds environmental awareness.* Ecotourism means education, for both tourists and residents of nearby communities. Well before departure, tour operators should supply travelers with reading material about the country, environment, and local people, as well as a code of conduct for both the traveler and the industry itself.

4. *Provides direct financial benefits for conservation.* Ecotourism helps raise funds for environmental protection, research, and education through a variety of mechanisms, including park entrance fees; tour company, hotel, airline, and airport taxes; and voluntary contributions.

5. *Provides financial benefits and empowerment for local people.* The local community must be involved with and receive income and other tangible benefits (potable water, roads, health clinics, etc.) from the conservation area and its tourist facilities.

6. *Respect local culture.* Ecotourism is not only "greener" but also less culturally intrusive and exploitative than conventional tourism, and strives to be culturally respectful and have a minimal effect on both the natural environment and the human population of a host country.

2.1. Project area

The project is under consideration in the Slavsk area (Figure 1) located in the Carpathians, which are of great importance to maintain the ecological balance in Central Europe because of their geographical position, climate, geomorphological structure and unique high mountain ecosystems (Andrianova, 1998). The Slavsk area is famous for skiing in winter, and camping as well as hiking is also popular in summer. There are some hotels and restaurants in this area, and tourism is absolutely an important industry. In addition, forestry is also a major industry in the area, and the coexistence of tourism and forestry should be considered in this project.

In the project area, there are two villages of Nyzhnya Rozhanka and Verkhnya Rozhanka, which are located in the basin surrounded by the mountains with the highest peak of 1,285 m. In the basin, there is the Rozhanka River, which is running from the mountains. Along the river, there is a main road that connects these two villages and the town of Slavsk. At present, the main road is not completely connected to the mountain ridges, where there are other small villages (Figure 2) and historic roads (Figure 3) partially connecting these villages. These roads were constructed by soldiers for the defense of the project area during the World War I, and were paved with stones, a part of which can still be seen nowadays. Many villagers on the ridge are earning their livelihood by farming and grazing (Figure 4), and some villagers are staying there even in winter in spite of a lot of snow. It is known that the first settlements in the basin of Rozhanka river appeared on the mountain meadows, where were the better conditions for farming. Nowadays the dwellings of local peasants are "ascending" to the mountainous from year to year.



Figure 1. The Slavsk area



Figure 2. A village on the ridge



Figure 3. The historic road paved with stones



Figure 4. Goats

2.2. Concepts of the ecotourism in the Carpathians

We propose three basic concepts for the ecotourism in the Carpathians:

1. Benefits for local people
2. Environmental conservation
3. Public involvement

Benefits for the local people are very important, and above all, we think that infrastructure such as roads should be improved. Many tourists are expected to come to this region by car, and food and other materials are also transported by truck. However, roads are not enough for such transportation in this region. Moreover, main roads should be paved so that cars can run easily even when it rains. In addition, more public transportation is necessary for successful tourism because some people do not have or

use cars, and they would use public transportation. It would be very convenient for the local people if there were more services of public transportation. The stable supply of water and electricity is also important for accommodating many tourists, and it would be beneficial for the local people as well as tourists. Local tax may be added to any service charges in the project area, and it may be used to improve lives and welfare of the local people. However, greatly reduced entrance and lodge fees for nationals and free educational trips for local students and those living in or near the project area must be offered because ecotourism projects should also help educate members of surrounding communities, schoolchildren, and the broader public in the host country (Honey, 1999).

We also should pay attention to environmental conservation because mass tourism often damage the natural environment due to the overuse of nature by tourists. As we mentioned above, roads are essential for successful tourism. However, it should be noted that road construction often damages nature or causes slope failures. We should plan the routes of forest roads minimizing the damage of nature such as vegetation or streams.

Public involvement in the process of planning ecotourism is a very new concept. Thus, we should respect the intentions of the local people. If they do not want large-scale mountain resorts, we should not produce such ones. It is necessary that we should explain the plan of ecotourism to the public correctly and clearly. It is also important that campsites, lodges, guide services, restaurants, and other concessions should be run by or in partnership with communities surrounding the tourist destination (Honey, 1999). Furthermore, the use of tour and car rental agencies, hotels, airlines, and other related businesses owned by host country nationals should be promoted so that profits can be more likely to stay in the host country (Honey, 1999). For successful ecotourism, well-trained, multilingual naturalist guides with skills in natural and cultural history, environmental interpretation, ethical principles, and effective communication are essential (Honey, 1999), and the local people may act as such a professional guide and get income from this job.

2.3. Road networks

There are three types of forest roads in the Carpathians shown as follows (Styranytsky and Potocnik, 2000):

Type I. Main roads that connect lower standard roads to the transportation network, i.e., public roads

Type II. Forest roads that connect separate forest sections

Type III. Spur roads that do not have further ramification

In addition, we would like to propose new road standards for tourism and forestry, which are shown in Table 1.

Table 1. New road standards for tourism and forestry

Type	Total width (m)	Effective width (m)	Shoulders (m)	Surface	Purpose
I	8.0	6.0	1.0	Paved with asphalt	Tourism and Forestry
II	4.0	3.0	0.5	Paved with asphalt or stones	Tourism and Forestry
III	3.0	2.0	0.5	Soil	Forestry

Although a main road (Type I) already exists in the project area, more forest roads (Types II) are essential for tourism. Spur roads (Type III) are also necessary for forestry that is also a major industry in the project area. The mountains that are surrounding the two villages are rather steep, so attention should be paid to slope failures and landslides caused by road construction (Yoshimura, 1997). Furthermore, forest roads should be constructed while protecting riparian areas, so protected areas, that is, buffer ones should be set up along streams.

In the project area, there remains historic roads on the mountain ridges, and these roads are intermittent at present. It would be convenient if they could be completely connected, and be a U-typed forest road that connect villages on the mountain ridges. However, it would be much more convenient if the U-typed road could be connected to the main road along the Rozhanka River at some points, and the U-typed forest road could form an O-typed or circular forest road. Such connection roads should be constructed as Type II roads, and pavement on the surface of them is necessary to prevent soil erosion because the gradients of these roads are expected to be rather steep.

2.4. What to see and what to do

There are a lot of beautiful nature and culture in the project area. The outskirts of the villages Verkhnya and Nyzhnya Rozhanka are extraordinary colorful. The summits of Sekul Range stretched like a chain in the Northeast. The most visible of them are Mahij (1283 m), Velykyj Sekul (1275 m), Tchyarak (1257 m). The mountain Vyso-kyj Verkh (1245 m) is rising above Verkhnya Rozhanka from the West. on the North side of this mountain is situated the source Pysana Kernytsya (known also as the Well of Oleksa Dovbush).

Tourists, especially from foreign countries, will be interested in historical wooden buildings. The styled wooden bojkiv church "Rising Of the Holly Spirit" is the handmade adornment of Verkhnya Rozhanka village. It was built in 1804 and is one of the most ancient in the Skole district (Lysenko, 1996).

Till the beginning of the World War II the basin of Rozhanka river was one of the center of summer recreational tourism. Nowadays camping near the Rozhanka River is one of the most enjoyable activities, and hiking is no less interesting. Tourists are expected to have their meals at restaurants or cafes run by the local people. To make tourism more attractive, a small historic, natural and cultural museum, i.e., a visitor center is necessary so that tourists can learn about the importance of nature and minimize their negative impacts while visiting sensitive environments.

Up in the mountain, there are villages, and tourists can stay there and enjoy a mountain life if they want. The villagers can get some income by giving tourists beds and meals. According to our experiences, cheese that is made from goat milk is excellent, and children coming from cities will be very pleased to play with animals such as goats. As we mentioned above, historic roads paved with stones still remain on the mountain ridges. If these stone roads are restored, tourists can easily move on the mountain ridges, and at the same time, learn the history of the area. Probably, stone roads in the mountains may be very interesting for tourists. In winter, there is a lot of snow and these activities are almost impossible. However, skiing is one of the most enjoyable activities in the area. For skiing, special facilities such as lifts are necessary.

3. Future direction

For successful ecotourism, it is essential that the local people should be involved in the process of ecotourism planning. Therefore, we will conduct interview or questionnaire research to let the public participate in the project. Before conducting this research, we will explain how the villagers will benefit from the project, how their lives will be improved and even what negative impacts on their lives or the environment will be brought by increased visitors. Then, we will be able to incorporate the local people's intentions into the ecotourism project.

It is also important that tourism and forestry will coexist in the project area. To make it possible, forestry should be more environmentally friendly. We suggest that tourists should come to see how trees are planted, maintained and harvested, and learn about forests and forestry on site. Such activities can be regarded as a kind of environmental education, and tourists can get invaluable information that can never be obtained just by reading books. In addition, we suggest that all facilities such as a visitor center and all furniture such as tables or chairs should be made with logs harvested in the project area. In this way, tourism benefits from forestry and forestry benefits from tourism, and coexistence of tourism and forestry will be realized by the ecotourism.

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ФОРМУВАННЯ НОВИХ ТЕХНОЛОГІЧНИХ ПІДХОДІВ ДО ВИРІШЕННЯ ПРОБЛЕМИ ПЕРЕРОБКИ І УТИЛІЗАЦІЇ ТВЕРДИХ ПАЛИВНИХ ВІДХОДІВ У МІСТАХ УКРАЇНИ

Розглядаються проблеми переробки та утилізації відходів у містах України. На підставі аналізу зарубіжного досвіду пропонуються нові технологічні та організаційні підходи щодо вирішення проблеми переробки відходів.